

**Final  
Site-Specific Safety and Health Plan Attachment  
Site Investigation at the  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan  
Calhoun County, Alabama  
EPA ID No. AL7 210 020 562**

**Prepared for:**

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**Prepared by:**

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Knoxville, Tennessee 37923**

**Delivery Order CK005  
Contract No. DACA21-96-D-0018  
IT Project No. 774645**

**December 1998**

**Revision 1**

This Site-Specific Safety and Health Plan must be used in conjunction with the Installation-Wide Safety and Health Plan, Fort McClellan, Alabama.

**Final**  
**Site-Specific Safety and Health Plan Attachment Approval**  
**Fort McClellan, Calhoun County, Alabama**

I have read and approve this site-specific safety and health plan attachment for the Drain Field (Building T-459), Parcel 236(Q) at Fort McClellan, Alabama, with respect to project hazards, regulatory requirements, and IT Corporation procedures.

Agnes Mayile for  
Jeanne Yacoub, PE  
Project Manager

12-4-98  
Date

Michael Henderson  
Michael Henderson, CIH  
Health & Safety Manager

12-4-98  
Date

Agnes Mayile for  
Jeff Tarr  
Site Coordinator

12-4-98  
Date

## **Acknowledgements**

The final approved version of this site-specific safety and health plan (SSHP) attachment for the Drain Field (Building T-459), Parcel 236(Q) at Fort McClellan, Alabama, has been provided to the site coordinator. I acknowledge my responsibility to provide the site coordinator with the equipment, materials, and qualified personnel to implement fully all safety requirements in this SSHP attachment. I will formally review this plan with the health and safety staff every 6 months until project completion.

Agnes Mayile for Jeanne Yacoub  
Project Manager

12-4-98  
Date

I acknowledge receipt of this SSHP attachment from the project manager, and that it is my responsibility to explain its contents to all site personnel and cause these requirements to be fully implemented. Any change in conditions, scope of work, or other change that might affect worker safety requires me to notify the project manager and/or the health and safety manager.

Agnes Mayile for Jeff Tarr  
Site Coordinator

12-4-98  
Date

## Acknowledgement Form

Fort McClellan, Calhoun County, Alabama.

**Date**This image shows a single sheet of white paper with horizontal blue or grey ruling lines, typical of notebook paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

## Fort McClellan Gate Hours

Baltzell Gate	Baltzell Road. Open 24 hours daily, 7 days a week.
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## Fort McClellan Project Emergency Contacts

Fire Department (on post) .....	Ext. 17
Fire Department (off post) .....	(256) 820-1117
Ambulance (on post) .....	Ext. 12
Ambulance (off post) .....	(256) 848-2315
Military Police (on post) .....	Ext. 5-3821
Military Police (off post) .....	(256) 848-5555
Regional Medical Center .....	(256) 235-5121
Chemical Agent Emergencies .....	Ext. 17
UXO Emergencies .....	Ext. 17
UXO Nonemergencies/Reporting Only (Ronald Levy) .....	(256) 848-3758
National Response Center .....	(800) 424-8802
Poison Control Center .....	(800) 462-0800
EPA Region IV .....	(404) 562-8725
Ronald Levy, Chief, FTMC Environmental Management .....	(256) 848-3758
Ellis Pope, U.S. Army Corps of Engineers .....	(334) 690-3077
Jeanne Yacoub, IT Project Manager .....	(423) 690-3211
Michael Henderson, IT H&S Manager .....	(423) 690-3211
Dr. Elaine Theriault, IT Occupational Physician .....	(800) 229-3674

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## ***List of Acronyms***

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BZ	breathing zone
FTMC	Fort McClellan
PPE	personal protective equipment
SHP	installation-wide safety and health plan
SSHO	site safety and health officer
SSHP	site-specific safety and health plan

## ***1.0 Site Work Plan Summary***

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***Project Objective.*** The objective of this investigation at Fort McClellan (FTMC), Calhoun County, Alabama is to collect and analyze samples from the Drain Field (Building T-459), Parcel 236(Q) and compute the site relative risk.

### ***Project Tasks***

- Collect two surface soil samples.
- Collect two subsurface soil samples.
- Collect two groundwater samples.

***Personnel Requirements.*** Up to five employees.

Note: All personnel on this site shall have received training, informational programs, and medical surveillance as outlined in the installation-wide safety and health plan (SHP) for site investigations at FTMC, and be familiar with the requirements of this site-specific SHP (SSHP). This SSHP must be used in conjunction with the SHP.

## ***2.0 Site Characterization and Analysis***

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### ***2.1 Anticipated Hazards***

The activity hazard analysis in Chapter 5.0 contains project-specific practices utilized to reduce or eliminate anticipated site hazards. The activity hazard analysis indicates specific chemical and physical hazards that may be present and encountered during each task from on-site operations. Below each task is a list of hazards and specific actions that will be taken to control the respective hazards. These control measures may include work practice controls, engineering controls, and/or use of appropriate personal protective equipment (PPE).

Parcel 236(Q) is located on the northern portion of the Main Post south of the eastern end of Reilly Airfield. The site is a septic system with a drain field located between Building T-459 and 10th Street. This system was used for domestic sewage from Building T-407 (classrooms), T-406 (latrine), and associated buildings (T-449, T-451, T-452, T-461, and T-459). This septic system is believed to have been constructed in the 1940s and remains active.

Table 2-1 contains the toxicological and physiological properties of chemicals anticipated or to be used at the Drain Field (Building T-459).

### ***2.2 General Site Information***

***Location and Approximate Size of Site.*** The Drain Field (Building T-459), Parcel 236(Q) is located on the eastern end of Reilly Airfield. The site is a septic system with a drain field located between Building T-459 and 10th Street.

***Duration of Planned Employee Activity.*** Employee activity duration is 1 month.

***Site Topography.*** Site elevation is approximately 760 feet with ground slope to the west, northwest.

***Pathways for Hazardous Substance Dispersion.*** A possible pathway for hazardous substances in the area is groundwater and soils.

Table 2-1

**Toxicological and Physical Properties of Chemicals  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 2)

Substance [CAS]	IP <sup>a</sup> (eV)	Odor Threshold (ppm)	Route <sup>b</sup>	Symptoms of Exposure	Treatment	TWA <sup>c</sup>	STEL <sup>d</sup>	Source <sup>e</sup>	IDLH (NIOSH) <sup>f</sup>
n-Hexane [110-54-3]	10.18	65-248	Inh Ing Con	Lightheadedness; nausea, headache; numbness of the extremities, muscular weakness; irritation of the eyes and nose; dermatitis; chemical pneumonia; giddiness.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	50 ppm 50 ppm 50 ppm		PEL TLV REL	5,000 ppm
Methane	12.48	4.2-5960	Inh	Simple asphyxiant.	Breath: Fresh air Immediate medical attention				
Nitric acid [7697-37-2]	11.95	0.3-1	Inh Ing Con	Irritated eyes, mucous membranes, and skin; delayed pulmonary edema, pneumonitis, bronchitis; dental erosion.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Respiratory support Swallow: Immediate medical attention	2 ppm 2 ppm 2 ppm	4 ppm 4 ppm 4 ppm	PEL TLV REL	100 ppm
Sodium hydroxide [1310-73-2]	NA	NA	Inh Ing Con	Irritated nose; pneumonitis; burns eyes, and skin; temporary loss of hair.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention		C2 mg/m <sup>3</sup> C2 mg/m <sup>3</sup> C2 mg/m <sup>3</sup>	PEL TLV REL	250 mg/m <sup>3</sup>

<sup>a</sup>IP = Ionization potential (electron volts).<sup>b</sup>Route = Inh, Inhalation; Abs, Skin absorption; Ing, Ingestion; Con, Skin and/or eye contact.<sup>c</sup>TWA = Time-weighted average. The TWA concentration for a normal work day (usually 8 or 10 hours) and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day without adverse effect.<sup>d</sup>STEL = Short-term exposure limit. A 15-minute TWA exposure that should not be exceeded at any time during a workday, even if the TWA is not exceeded.<sup>e</sup>PEL = Occupational Safety and Health Administration (OSHA) permissible exposure limit (29 CFR 1910.1000, Table Z).

AEL = Airborne Exposure Limit.

TLV = American Conference of Governmental Industrial Hygiene (ACGIH) threshold limit value—TWA.

REL = National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit.

**Table 2-1**

**Toxicological and Physical Properties of Chemicals  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

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<sup>1</sup>IDLH (NIOSH)—Immediately dangerous to life or health (NIOSH). Represents the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.

NE = No evidence could be found for the existence of an IDLH (NIOSH Pocket Guide to Chemical Hazards, Pub. 1998).

C = Ceiling limit value which should not be exceeded at any time.

Ca = Carcinogen.

NA = Not applicable.

? = Unknown.

LEL = Lower explosive limits.

LC<sub>50</sub> = Lethal concentration for 50 percent of population tested.

LD<sub>50</sub> = Lethal dose for 50 percent of population tested.

NIC = Notice of Intended change (ACGIH).

**References:**

American Conference of Governmental Industrial Hygienists Guide to Occupational Exposure Values, 1998, compiled by the American Conference of Governmental Industrial Hygienists.

Amoore, J. E. Hautula, "Odor as an Aid to Chemical Safety," Journal of Applied Toxicology, 1983.

Clayton, George D., Clayton, F. E., Patty's Industrial Hygiene and Toxicology, 3rd ed., John Wiley & Sons, New York.

Documentation of TLVs and BEIs, American Conference of Governmental Industrial Hygienists, 6th ed., 1998.

Fazzuluri, F. A., Compilation of Odor and Taste Threshold Values Data, American Society for Testing and Materials, 1978.

Gemet, L. J. Van, Compilation of Odor Threshold Values in Air and Water, CIVO, Netherlands, 1977.

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Lewis, Richard J., Sr., 1992, Sax's Dangerous Properties of Industrial Materials, 8th ed., Van Nostrand Reinhold, New York.

Micromedex Tomes Plus (R) System, 1992, Micromedex, Inc.

National Institute for Occupational Safety and Health Pocket Guide to Chemicals, Pub. 1998, National Institute for Occupational Safety and Health.

Odor Threshold for Chemicals with Established Occupational Health Standards, American Industrial Hygiene Association, 1989.

Respirator Selection Guide, 3M Occupational Health and Safety Division, 1993.

Verschueren, K., Handbook of Environmental Data on Organic Chemicals, Van Nostrand and Reinhold, 1977.

Warning Properties of Industrial Chemicals—Occupational Health Resource Center, Oregon Lung Association.

Workplace Environmental Exposure Levels, American Industrial Hygiene Association, 1992.

### ***3.0 Personal Protective Equipment***

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The work activities will begin in the following levels of protection. Also, a completed description of Level D, Modified Level D, and Level C PPE is provided.

Task	Initial Level of PPE
Staging equipment	Level D
Collecting samples	Modified Level D*

\*Initial level will be raised to Level C or higher if air monitoring results in the worker's breathing zone (BZ) are greater than action levels.

**Level D.** The minimal level of protection that will be required of IT Corporation personnel at the site will be Level D. The following equipment will be used for Level D protection:

- Coveralls or work clothing
- Leather work gloves (when necessary)
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

**Modified Level D.** The following equipment will be used for Level D-Modified protection:

- Permeable Tyvek, Kleenguard, or its equivalent (Saran-coated tyvek where chemical agents are anticipated)
- Latex boot covers
- Nitrile, heavy work, or latex gloves
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

Note: In addition to modifying Level D PPE, the operator of high-pressure water jetting equipment shall wear metatarsal guards for the legs and feet.

**Level C.** Level C protection will not be used unless air monitoring data indicate the need for upgrade; however, the equipment shall be readily available on site. The following equipment will be used for Level C protection:

- National Institute of Occupational Safety and Health/Mine Safety and Health Administration-approved full-face, air-purifying respirators equipped with organic vapor/acid gas cartridge in combination with high-efficiency particulate air filter
- Hooded, Saran-coated Tyvek, taped at gloves, boots, and respirator
- Nitrile gloves (outer)
- Latex or lightweight nitrile gloves (inner)
- Neoprene steel-toed boots or polyvinyl chloride overbooties/steel-toed safety boots
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

Note: In addition to Level C PPE, the operator of high-pressure water jetting equipment shall wear metatarsal guards for the legs and feet.

## ***4.0 Site Monitoring***

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The potential environmental contaminant of concern resulting from Drain Field (Building T-459) operations is methane. Table 4-1 contains action levels for site monitoring at the Drain Field Area.

Monitoring will be performed by the site safety and health officer (SSHO) during the performance of ground intrusive operations. A calibrated flame ionization detector (i.e., OVA 128 or equivalent) organic vapor analyzer will be utilized to monitor the sampling locations and BZ to determine if any organic material may be present that would necessitate upgrading of protection level. A calibrated combustible gas/oxygen indicator will be utilized to monitor the sampling areas and BZ to determine if any combustible/flammable gases or oxygen levels may be present that would necessitate evacuation of the work area. Table 4-2 contains the air monitoring frequency and location for site monitoring at the Drain Field (Building T-459).



**Table 4-1**

**Action Levels  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

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When in Level C Personal Protective Equipment (PPE)

Analyte	Action Level	Required Action <sup>a</sup>
VOHs	$\geq 10$ ppm above background in breathing zone (BZ)	Stop work, evacuate work area, upgrade to Level B.
Oxygen	$\geq 20\%$ , $<23\%$ $< 20\%$ , $>23\%$	Normal operations. Stop work, evacuate work area.
Flammable vapors	$\geq 10\%$ lower explosive limit (LEL) $< 10\%$ LEL	Stop work, evacuate work area. Continue operations, monitor for volatile organic compounds (VOC).

When in Level D Modified/D PPE

Analyte	Action Level	Required Action <sup>b</sup>
VOHs	$\geq 5$ ppm above background in BZ	Stop activities, suspend work activities for 15 to 30 minutes, if readings are sustained then upgrade to Level C PPE.
Oxygen	$\geq 20\%$ , $<23\%$ $< 20\%$ , $>23\%$	Normal operations. Stop work, evacuate work area.
Flammable vapors	$\geq 10\%$ LEL $< 10\%$ LEL	Stop work, evacuate work area. Continue operations, monitor for VOCs.

**Table 4-1**

**Action Levels  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

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When in Support Zone

Analyte	Action Level	Required Action
VOHs	$\geq 1$ ppm above background in BZ	Evacuate support zone and re-establish perimeter of exclusion zone.

<sup>a</sup> Four instantaneous peaks in any 15-minute period or a sustained reading for 5 minutes in excess of the action level will trigger a response.

<sup>b</sup> Contact with the H&S manager must be made prior to continuance of work. The H&S manager may then initiate perimeter/integrated air sampling along with additional engineering controls.

**No one is permitted to downgrade levels of PPE without authorization from the H&S manager.**

**Table 4-2**

**Air Monitoring Frequency and Locations  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

Work Activity	Instrument	Frequency	Location
Staging equipment	OV Monitor	Initially for area	Breathing zone (BZ) of employees
Sampling (groundwater and soils)	OV Monitor LEL/O <sub>2</sub> Monitor	Continuously Continuously	BZ of employees Support zone

OV = Organic vapor.

LEL/O<sub>2</sub> = Lower explosive level/oxygen.

## ***5.0 Activity Hazard Analysis***

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The attached activity hazard analysis (Table 5-1) is provided for the following activities:

- Setup of equipment and general field activities
- Groundwater and soils sampling.

All injuries and illnesses must be immediately reported to the site manager or the SSHO, who will then notify off-site personnel and organizations as necessary.

If hospital care must be provided, the victim shall be treated at Northeast Regional Medical Center. Directions to the hospital are provided in Figure 1-1.

**Table 5-1**

**Activity Hazard Analysis  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 12)

Activity	Potential Hazards	Recommended Controls
Staging Equipment	Slip, trip, and fall hazards	<ul style="list-style-type: none"> <li>Determine best access route before transporting equipment.</li> <li>Practice good housekeeping; keep work area picked up and clean as feasible.</li> <li>Continually inspect the work area for slip, trip, and fall hazards.</li> <li>Look before you step; ensure safe and secure footing.</li> </ul>
	Heavy lifting	<ul style="list-style-type: none"> <li>Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment.</li> </ul>
	Falling objects	<ul style="list-style-type: none"> <li>Stay alert and clear of materials suspended overhead; wear hard hat and steel-toed boots.</li> </ul>
	Flying debris, dirt, dust, etc.	<ul style="list-style-type: none"> <li>Wear safety glasses/goggles; ensure that eye wash is in proper working condition.</li> </ul>
	Pinch points	<ul style="list-style-type: none"> <li>Keep hands, fingers, and feet clear of moving/suspended materials and equipment.</li> <li>Beware of contact points.</li> <li>Stay alert at all times!</li> </ul>
	Cuts/bruises	<ul style="list-style-type: none"> <li>Use cotton or leather work gloves for material handling.</li> </ul>
	Bees, spiders, and snakes	<ul style="list-style-type: none"> <li>Inspect work area carefully and avoid placing hands and feet into concealed areas.</li> </ul>
	Ticks	<ul style="list-style-type: none"> <li>Wear light colored clothing (can see ticks better).</li> <li>Mow vegetated and small brush areas.</li> <li>Wear insect repellant.</li> <li>Wear long sleeves and long pants.</li> <li>Visually check oneself promptly and frequently after exiting the work area.</li> </ul>
	Fire	<ul style="list-style-type: none"> <li>Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>
	Hazard communication	<ul style="list-style-type: none"> <li>Label all containers as to contents and dispose of properly.</li> <li>Ensure Material Safety Data Sheets (MSDS) are available for hazardous chemicals used on site.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 12)

Activity	Potential Hazards	Recommended Controls
Staging Equipment (continued)	Noise	<ul style="list-style-type: none"> <li>• Sound levels above 85 decibels (dBA) mandates hearing protection.</li> </ul>
	Lighting	<ul style="list-style-type: none"> <li>• Adequate lighting will be provided to ensure a safe working environment.</li> </ul>
	Cold stress	<ul style="list-style-type: none"> <li>• Workers should wear insulated clothing when temperatures drop below 40 degrees Fahrenheit (°F).</li> <li>• Drink warm beverages on breaks. Refrain from drinking caffeinated beverages.</li> <li>• Remove wet clothing promptly.</li> <li>• Take breaks in warm areas.</li> <li>• Reduce work periods as necessary.</li> <li>• Layer work clothing.</li> </ul>
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> <li>• Avoid plant areas if possible.</li> <li>• Wear long sleeves and long pants.</li> <li>• Promptly wash clothing that has contacted poisonous plants.</li> <li>• Wash affected areas immediately with soap and water.</li> </ul>
	Heat rash	<ul style="list-style-type: none"> <li>• Keep the skin clean and dry.</li> <li>• Change perspiration-soaked clothing, as necessary.</li> <li>• Bathe at end of work shift or day.</li> <li>• Apply powder to affected area.</li> </ul>
	Heat cramps	<ul style="list-style-type: none"> <li>• Drink plenty of cool fluids even when not thirsty.</li> <li>• Provide cool fluid for work crews.</li> <li>• Move victim to shaded, cool area.</li> </ul>
	Heat exhaustion	<ul style="list-style-type: none"> <li>• Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature).</li> <li>• Set up work/rest periods.</li> <li>• Use the "buddy system."</li> <li>• Allow workers time to acclimate.</li> <li>• Have ice packs available for use.</li> <li>• Take frequent breaks.</li> </ul>
	Heat stroke	<ul style="list-style-type: none"> <li>• Evaluate possibility of night work.</li> <li>• Perform physiological monitoring on workers during breaks.</li> <li>• Wear body cooling devices.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

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Activity	Potential Hazards	Recommended Controls
Staging Equipment (continued)	Contact with moving equipment/vehicles	<ul style="list-style-type: none"><li>• Work area will be barricaded/demarcated.</li><li>• Equipment will be laid out in an area free of traffic flow.</li><li>• Barricades shall be used on or around work areas when it is necessary to prevent the inadvertent intrusion of pedestrian traffic.</li><li>• Barriers shall be used to protect workers from vehicular traffic.</li><li>• Barriers shall be used to guard excavations adjacent to streets or roadways.</li><li>• Flagging shall be used for the short term (less than 24 hours) to identify hazards until proper barricades or barriers are provided.</li><li>• Heavy equipment shall have backup alarms.</li></ul>
	Forklift operations	<ul style="list-style-type: none"><li>• Use qualified and trained forklift operators.</li><li>• The operator shall not exceed the load capacity rating for the forklift.</li><li>• The load capacity shall be clearly visible on the forklift.</li><li>• Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.</li></ul>
	Portable electric tools	<ul style="list-style-type: none"><li>• Portable electric tools that are unsafe due to faulty plugs, damaged cords, or other reasons, shall be tagged (do not use) and removed from service.</li><li>• Portable electric tools and all cord and plug connected equipment shall be protected by a ground-fault circuit interrupter device.</li><li>• Electrical tools shall be inspected daily prior to use.</li></ul>
	Extension cords	<ul style="list-style-type: none"><li>• Extension cords that have faulty plugs, damaged insulation, or are unsafe in any way shall be removed from service.</li><li>• Cords shall be protected from damage from sharp edges, projections, pinch points (doorways), and vehicular traffic.</li><li>• Cords shall be suspended with a nonconductive support (rope, plastic ties, etc.).</li><li>• Cords shall be designed for hard duty.</li><li>• Cords shall be inspected daily.</li></ul>

**Table 5-1**

**Activity Hazard Analysis  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 12)

Activity	Potential Hazards	Recommended Controls
Staging Equipment (continued)	Lightning strikes	<ul style="list-style-type: none"> <li>• Whenever possible, halt activities and take cover.</li> <li>• If outdoors, stay low to the ground.</li> <li>• Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground).</li> <li>• Seek shelter in a building if possible.</li> <li>• Stay away from windows.</li> <li>• If available, crouch under a group of trees instead of one.</li> <li>• Keep all body parts in contact with the ground as close as possible.</li> <li>• Remain 6 feet away from tree trunk if seeking shelter beneath tree(s).</li> <li>• If in a group, keep 6 feet of distance between people.</li> </ul>
	Thunderstorms, tornados	<ul style="list-style-type: none"> <li>• Listen to radio or TV announcements for pending weather information.</li> <li>• Cease field activities during thunderstorm or tornado warnings.</li> <li>• Seek shelter. Do not try to outrun a tornado.</li> </ul>
Surveying	Slip, trip, and fall hazards	<ul style="list-style-type: none"> <li>• Site workers will be required to wear hard hat, safety glasses with side shields, work gloves, and steel-toe boots when working in the field.</li> <li>• Provide adequate lighting in all work areas.</li> <li>• Whenever possible, avoid routing cords and hoses across walking pathways.</li> <li>• Flag or cover inconspicuous holes to protect against falls.</li> <li>• Work areas will be kept clean and orderly.</li> <li>• Garbage and trash will be disposed of daily in approved refuse containers.</li> <li>• Tools and accessories will be properly maintained and stored.</li> <li>• Work areas and floors will be kept free of dirt, grease, and slippery materials.</li> </ul>
	Traffic accidents	<ul style="list-style-type: none"> <li>• Place physical barrier (i.e., barricades, fencing) around work areas regularly occupied by pedestrians.</li> <li>• If working adjacent to roadways, have workers wear fluorescent orange vests.</li> <li>• Use warning signs or lights to alert oncoming traffic.</li> <li>• Assign flag person(s) if necessary to direct local traffic.</li> <li>• Set up temporary parking locations outside the immediate work area.</li> <li>• Motor vehicle operators shall obey all posted traffic signs, signals, and speed limits.</li> <li>• Pedestrians have the right-of-way.</li> <li>• Wear seat belts when vehicles are in motion.</li> </ul>
	Wildlife hazards	<ul style="list-style-type: none"> <li>• Workers should be cautious when driving through the site in order to avoid encounters with passing animals.</li> </ul>



**Table 5-1**

**Activity Hazard Analysis  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

(Page 5 of 12)

Activity	Potential Hazards	Recommended Controls
Surveying (continued)	Biological hazards	<ul style="list-style-type: none"> <li>Walking through overgrown grass areas, watch for snakes (rattlesnakes, moccasins, copperheads).</li> </ul>
	Ticks	<ul style="list-style-type: none"> <li>Wear light colored clothing (can see ticks better).</li> <li>Mow vegetated and small brush areas.</li> <li>Wear insect repellent.</li> <li>Wear long sleeves and long pants.</li> <li>Visually check oneself promptly and frequently after exiting the work area.</li> </ul>
	Poison Ivy/oak/sumac	<ul style="list-style-type: none"> <li>Avoid plant areas if possible.</li> <li>Wear long sleeves and long pants.</li> <li>Promptly wash clothing that has contacted poisonous plants.</li> <li>Wash affected areas immediately with soap and water.</li> </ul>
Groundwater Sampling	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> <li>Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.</li> <li>Avoid skin contact with water.</li> <li>Handle samples with care.</li> <li>Only essential personnel will be in the work area.</li> <li>Real-time air monitoring will take place before and during sampling activities.</li> <li>All personnel will follow good hygiene practices.</li> <li>Proper decontamination procedures will be followed.</li> <li>All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.</li> </ul>
	Cut hazards	<ul style="list-style-type: none"> <li>Use care when handling glassware.</li> <li>Wear adequate hand protection.</li> </ul>
	Hazard communication	<ul style="list-style-type: none"> <li>MSDSs shall be obtained for chemicals brought on site.</li> <li>Label all containers as to contents.</li> </ul>
	Strains/sprains	<ul style="list-style-type: none"> <li>Use the proper tool for the job being performed.</li> <li>Get assistance if needed.</li> <li>Avoid twisting/turning while pulling on tools, moving equipment, etc.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

(Page 6 of 12)

Activity	Potential Hazards	Recommended Controls
Groundwater Sampling (continued)	Spills/residual materials	<ul style="list-style-type: none"><li>Absorbent material and containers will be kept available where leaks or spills may occur.</li></ul>
	Lighting	<ul style="list-style-type: none"><li>Adequate lighting will be provided to ensure a safe working environment.</li></ul>
	Unattended worker	<ul style="list-style-type: none"><li>Use "buddy system" - visual contact will be maintained with the sampling technician during sampling activities.</li></ul>
Moving and Shipping Collected Samples	Heavy lifting	<ul style="list-style-type: none"><li>Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.</li></ul>
	Pinch points	<ul style="list-style-type: none"><li>Keep hands, fingers, and feet clear of moving/suspended materials and equipment.</li><li>Beware of contact points.</li><li>Stay alert at all times!</li></ul>
	Cut hazards	<ul style="list-style-type: none"><li>Wear adequate hand protection. Use care when handling glassware.</li></ul>
	Hazard communication	<ul style="list-style-type: none"><li>Label all containers as to contents and associated hazards.</li></ul>
	Heavy lifting	<ul style="list-style-type: none"><li>Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.</li></ul>
Material Storage	Flammable and combustible liquids	<ul style="list-style-type: none"><li>Store in NO SMOKING AREA.</li><li>Fire extinguisher readily available.</li><li>Transfer only when properly grounded and bonded.</li></ul>
Disposal of Investigation-Derived Waste (IDW) (Forklift Operation)	Personnel injury, property damage, and/or equipment damage	<ul style="list-style-type: none"><li>Use qualified and trained forklift operators.</li><li>The operator shall not exceed the load capacity rating for the forklift.</li><li>The load capacity shall be clearly visible on the forklift.</li><li>Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.</li></ul>

**Table 5-1**

**Activity Hazard Analysis  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

(Page 7 of 12)

Activity	Potential Hazards	Recommended Controls
Disposal of Investigation-Derived Waste (IDW) (Forklift Operation) (continued)	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> <li>• Stop immediately at any sign of obstruction.</li> <li>• Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.</li> <li>• Only essential personnel will be in the work area.</li> <li>• Real-time air monitoring will take place before and during sampling activities.</li> <li>• All personnel will follow good hygiene practices.</li> <li>• Proper decontamination procedures will be followed.</li> <li>• All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.</li> </ul>
	Cut hazards	<ul style="list-style-type: none"> <li>• Use care when handling glassware.</li> <li>• Wear adequate hand protection.</li> </ul>
High-Pressure Water Jetting Operations	Heavy lifting	<ul style="list-style-type: none"> <li>• Use proper lifting techniques.</li> <li>• Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.</li> </ul>
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> <li>• Good housekeeping shall be implemented.</li> <li>• The work area shall be kept clean as feasible.</li> <li>• Inspect the work area for slip, trip, and fall hazards.</li> </ul>
	Fueling	<ul style="list-style-type: none"> <li>• Only approved safety cans shall be used to store fuel.</li> <li>• Do not refuel equipment while it is operating.</li> <li>• Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>
	Faulty or damaged equipment	<ul style="list-style-type: none"> <li>• Equipment shall be inspected before being placed into service and at the beginning of each shift.</li> <li>• Preventive maintenance procedures recommended by the manufacturer shall be followed.</li> <li>• A lockout/tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.</li> </ul>
	High-pressure water	<ul style="list-style-type: none"> <li>• Jetting gun operator must wear appropriate PPE including hard hat, impact-resistant safety glasses with side shields, water-resistant clothing, metatarsal guards for feet and legs, and hearing protection (if appropriate).</li> <li>• One standby person shall be available within the vicinity of the pump during jetting operation.</li> <li>• The work area shall be isolated and adequate barriers will be used to warn other site personnel.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

(Page 8 of 12)

Activity	Potential Hazards	Recommended Controls
High-Pressure Water Jetting Operations (continued)	Unqualified operators	<ul style="list-style-type: none"><li>Only qualified and trained personnel are permitted to operate machinery and mechanized equipment associated with water jet cutting and cleaning.</li></ul>
	Out of control equipment	<ul style="list-style-type: none"><li>No machinery or equipment is permitted to run unattended.</li><li>Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.</li></ul>
	Noise	<ul style="list-style-type: none"><li>Sound levels above 85 dBA mandates hearing protection by nearby site personnel.</li></ul>
	Activation during repairs	<ul style="list-style-type: none"><li>All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.</li></ul>
	Pinch points	<ul style="list-style-type: none"><li>Keep feet and hands clear of moving/suspended materials and equipment.</li><li>Stay alert and clear of materials suspended .</li></ul>
	Falling objects	<ul style="list-style-type: none"><li>Hard hats are required by site personnel.</li><li>Stay alert and clear of material suspended overhead.</li></ul>
	Flying debris	<ul style="list-style-type: none"><li>Impact-resistant safety glasses with side shields are required.</li></ul>
	Contact with potentially contaminated materials	<ul style="list-style-type: none"><li>All site personnel will wear the appropriate PPE.</li></ul>

**Table 5-1**

**Activity Hazard Analysis  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

(Page 9 of 12)

Activity	Potential Hazards	Recommended Controls
Soil Boring and Surface/Subsurface Sampling	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"><li>• Stop immediately at any sign of obstruction.</li><li>• Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.</li><li>• Only essential personnel will be in the work area.</li><li>• Real-time air monitoring will take place before and during sampling activities.</li><li>• All personnel will follow good hygiene practices.</li><li>• Proper decontamination procedures will be followed.</li><li>• All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.</li></ul>
	Cut hazards	<ul style="list-style-type: none"><li>• Use care when handling glassware.</li><li>• Wear adequate hand protection.</li></ul>
	Slip, trip, and fall hazards	<ul style="list-style-type: none"><li>• Site workers will be required to wear hard hat, safety glasses with side shields, work gloves, and steel-toe/shank boots when working in the field.</li><li>• Whenever possible, avoid routing cords and hoses across walking pathways.</li><li>• Flag or cover inconspicuous holes to protect against falls.</li></ul>
	Bees, spiders, and snakes	<ul style="list-style-type: none"><li>• Workers shall inspect the work area carefully and avoid placing hands and feet into concealed areas.</li><li>• Evaluate need for sensitive workers to have prescribed antibiotic or medicine to combat onset of symptoms.</li></ul>
	Poison ivy/oak/sumac	<ul style="list-style-type: none"><li>• Avoid plant areas if possible.</li><li>• Wear long sleeves and long pants.</li><li>• Promptly wash clothing that has contacted poisonous plants.</li><li>• Wash affected areas immediately with soap and water.</li></ul>
	Cold stress	<ul style="list-style-type: none"><li>• Workers should wear insulated clothing when temperatures drop below 40°F.</li><li>• Drink warm beverages on breaks. Refrain from drinking caffeinated beverages.</li><li>• Remove wet clothing promptly.</li><li>• Take breaks in warm areas.</li><li>• Reduce work periods as necessary.</li><li>• Layer work clothing.</li></ul>

**Table 5-1**

**Activity Hazard Analysis  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

(Page 10 of 12)

Activity	Potential Hazards	Recommended Controls
Soil Boring and Surface/Subsurface Sampling (continued)	Access/egress hazards	<ul style="list-style-type: none"><li>• Use qualified and trained bushhog operator.</li><li>• Keep employees out of the bushhog work area.</li><li>• Utilize good housekeeping practices.</li><li>• Keep aisleways, pathways, and work areas free of obstruction.</li><li>• Clean ice or snow off of walkways or work stations.</li><li>• Use appropriate footwear for the task assigned.</li></ul>
	Heat rash	<ul style="list-style-type: none"><li>• Keep the skin clean and dry.</li><li>• Change perspiration-soaked clothing, as necessary.</li><li>• Bathe at end of work shift or day.</li><li>• Apply powder to affected area.</li></ul>
	Heat cramps	<ul style="list-style-type: none"><li>• Drink plenty of cool fluids even when not thirsty.</li><li>• Provide cool fluid for work crews.</li><li>• Move victim to shaded, cool area.</li></ul>
	Heat exhaustion	<ul style="list-style-type: none"><li>• Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature).</li><li>• Set up work/rest periods.</li><li>• Use the buddy system.</li><li>• Allow workers time to acclimate.</li><li>• Have ice packs available for use.</li><li>• Take frequent breaks.</li></ul>
	Heat stroke	<ul style="list-style-type: none"><li>• Evaluate possibility of night work.</li><li>• Perform physiological monitoring on workers during breaks.</li><li>• Wear body cooling devices.</li></ul>

**Table 5-1**

**Activity Hazard Analysis  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

(Page 11 of 12)

Activity	Potential Hazards	Recommended Controls
Soil Boring and Surface/Subsurface Sampling (continued)	Lightning strikes	<ul style="list-style-type: none"> <li>• Whenever possible, halt activities and take cover.</li> <li>• If outdoors, stay low to the ground.</li> <li>• Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground).</li> <li>• Seek shelter in a building if possible.</li> <li>• Stay away from windows.</li> <li>• If available, crouch under a group of trees instead of one.</li> <li>• Keep all body parts in contact with the ground as close as possible.</li> <li>• If in a group, keep 6 feet of distance between people.</li> </ul>
Hydropunch Sampling	Faulty or damaged equipment being utilized to perform work	<ul style="list-style-type: none"> <li>• All machinery or mechanized equipment will be inspected by a competent mechanic and certified to be in safe operating condition.</li> <li>• Equipment will be inspected before use and at the beginning of each shift.</li> <li>• Faulty/unsafe equipment will be tagged and if possible locked out.</li> <li>• Drill rigs shall be equipped with reverse signal alarm, backup warning lights, or the vehicle is backed up only when an observer signals it is safe to do so.</li> </ul>
	Uneven terrain, poor ground support, inadequate clearances, contact with utilities	<ul style="list-style-type: none"> <li>• Inspections or determinations of road conditions and structures shall be made in advance to ensure that clearances and load capacities are safe for the passage or placing of any machinery or equipment.</li> <li>• All mobile equipment and areas in which they are operated shall be adequately illuminated.</li> <li>• Whenever the equipment is parked, the parking brake shall be set.</li> <li>• Equipment parked on inclines will have the wheels chocked.</li> <li>• Inspect brakes and tire pressure on drill rig before staging for work.</li> <li>• Obtain trenching/drilling permit prior to operation.</li> </ul>
	Inexperienced operator	<ul style="list-style-type: none"> <li>• Machinery and mechanized equipment shall be operated only by designated personnel.</li> <li>• Heavy equipment operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgement.</li> </ul>
	Jacks/outriggers	<ul style="list-style-type: none"> <li>• Ensure proper footing and cribbing.</li> </ul>

**Table 5-1**

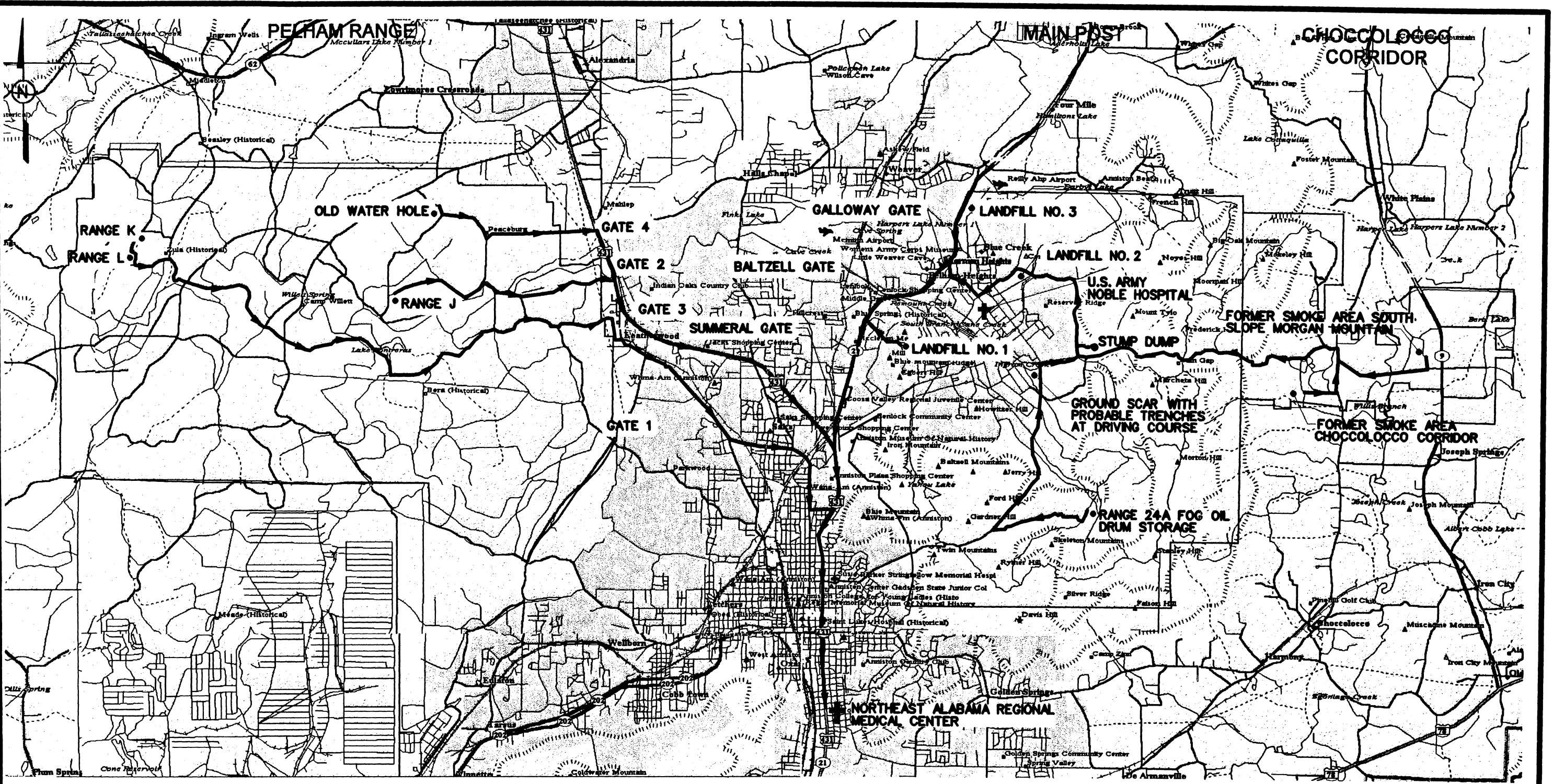
**Activity Hazard Analysis  
Drain Field (Building T-459), Parcel 236(Q)  
Fort McClellan, Calhoun County, Alabama**

(Page 12 of 12)

Activity	Potential Hazards	Recommended Controls
Hydropunch Sampling (continued)	Falling objects	<ul style="list-style-type: none"><li>• Remove unsecured tools and materials before raising or lowering the derrick.</li><li>• Stay alert and clear of materials suspended overhead.</li></ul>
	Pinch points	<ul style="list-style-type: none"><li>• Keep feet and hands clear of moving/suspended materials and equipment.</li><li>• Stay alert at all times!</li></ul>
	Fire	<ul style="list-style-type: none"><li>• Mechanized equipment shall be shut down prior to and during fueling operations.</li><li>• Have fire extinguishers inspected and readily available.</li></ul>
	Fall hazards	<ul style="list-style-type: none"><li>• Personnel are not allowed to work off of machinery or use them as ladders.</li><li>• Use fall protection when working above 6 feet.</li></ul>
	Noise	<ul style="list-style-type: none"><li>• Hearing protection is mandatory above 85 dBA.</li></ul>
	Contact with rotating or reciprocating machine part	<ul style="list-style-type: none"><li>• Use machine guards; use long-handled shovels to remove auger cuttings.</li><li>• Safe lockout procedures for maintenance work.</li></ul>
	Heavy lifting	<ul style="list-style-type: none"><li>• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size-up the lift.</li></ul>
	Slip, trip, and fall hazards	<ul style="list-style-type: none"><li>• Practice good housekeeping; keep work area picked up and clean as feasible.</li><li>• Continually inspect the work area for slip, trip, and fall hazards.</li></ul>
	Contact with potentially contaminated materials	<ul style="list-style-type: none"><li>• Real time air monitoring will take place. If necessary, proper personal protective clothing and equipment will be utilized.</li></ul>



19 NOV 98  
DRAFT  
STARTING DATE: 8/26/98  
DRAWN BY: D. BILLINGSLEY  
DATE LAST  
14:07:49  
INITIATOR: A. MAYILA  
DWG. NO.: 645es.218  
PROJ. NO.: 774645  
ENGR. CHK. BY: A. MAYILA  
DRAFT. CHK. BY:

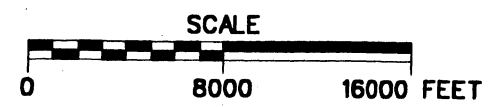


**LEGEND:**

- ROUTE TO NORTHEAST ALABAMA REGIONAL MEDICAL CENTER
- U.S. HIGHWAY
- HOSPITALS
- INVESTIGATION SITES

**FIGURE 1  
HOSPITAL EMERGENCY ROUTES**

U. S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT  
FORT McCLELLAN  
CALHOUN COUNTY, ALABAMA  
Contract No. DACA21-96-D-0018



NOT TO SCALE

FIRE DEPT. PHONE NUMBER: (205) 848-5936